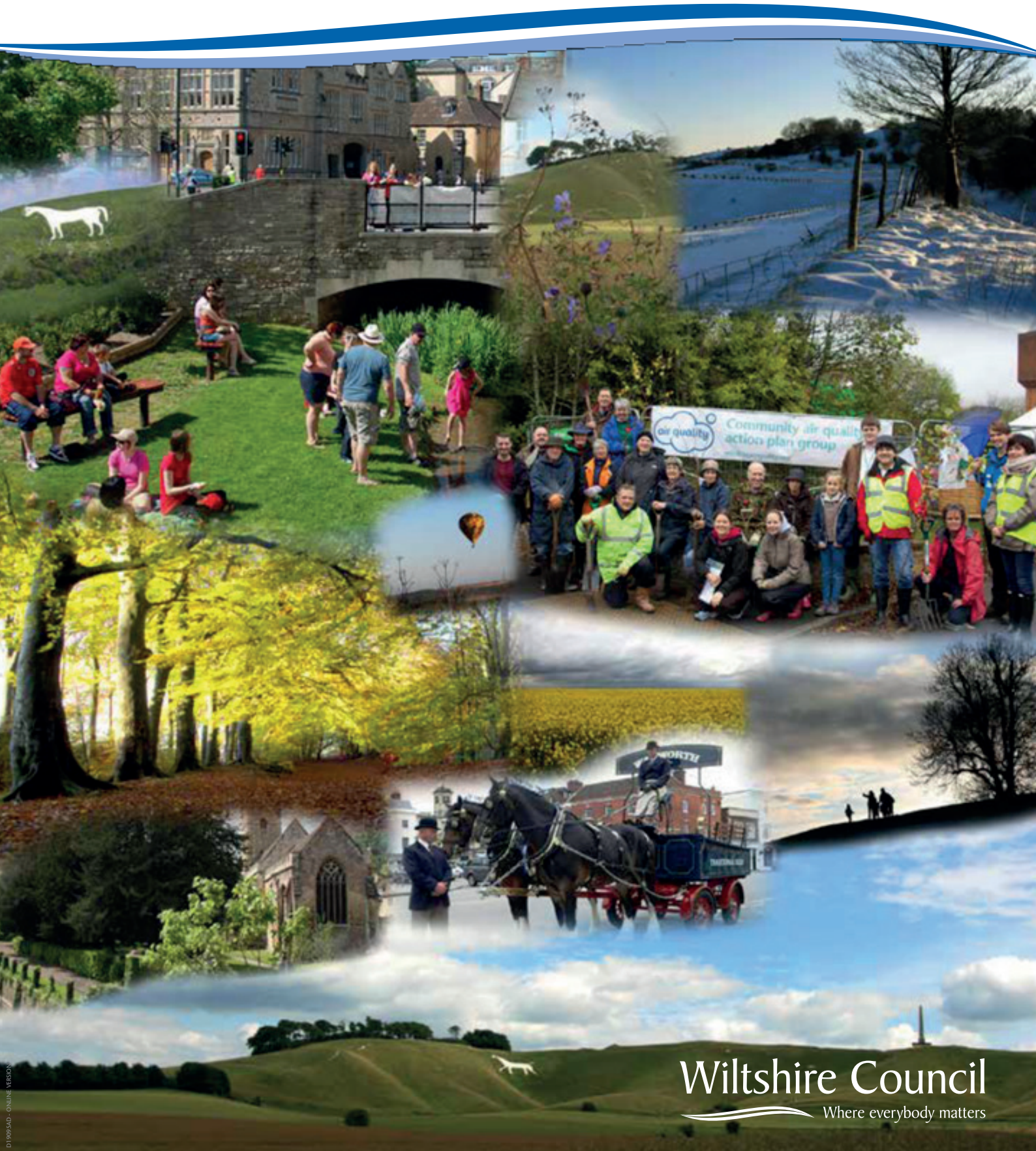
Air Quality Strategy for Wiltshire

2019-2024



Wiltshire Council

Where everybody matters

D19095AD - ONLINE VERSION

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Section 1: Introduction

Our objective is to improve the air we breathe and to better our environment, health and wellbeing.

Since the first Wiltshire Air Quality Strategy was published in 2011, issues around air quality and health have moved on considerably both nationally and locally. In Wiltshire we prioritised the development of core policy 55, working with the spatial planners to get it accepted as part of the Wiltshire Core Strategy. We drafted initial guidance on air quality for developers and worked with the area boards to establish community air quality working groups. The details of our community based approach and local actions are contained in the Wiltshire Air Quality Action Plan (AQAP) and not in this strategy document. The Action Plan focuses on the areas where air quality levels are currently being exceeded.

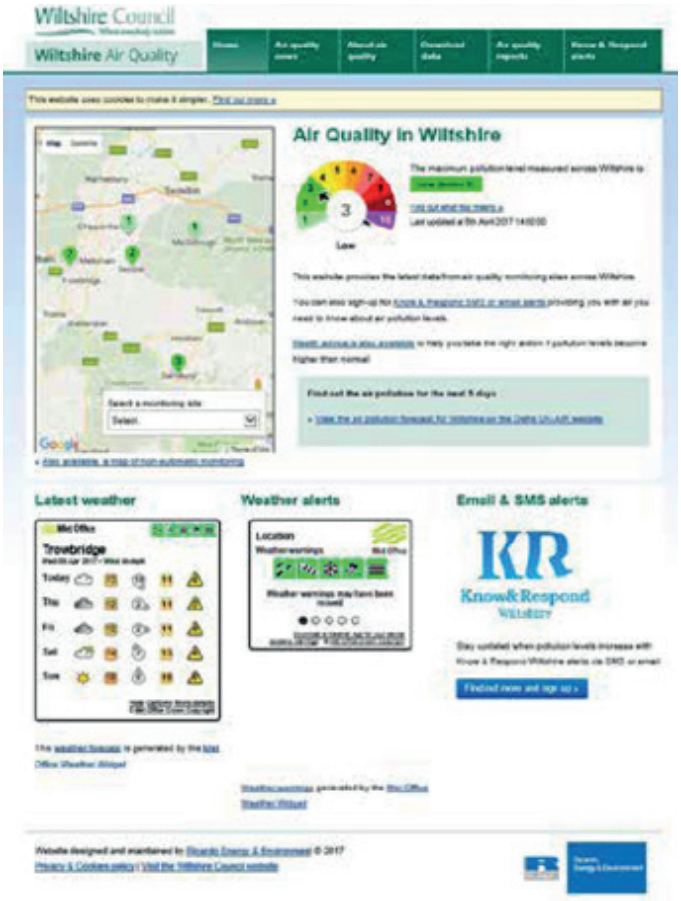
This updated air quality strategy seeks to maintain progress with the improvement of air quality across all communities in Wiltshire, and reflects the national **Clean Air Strategy 2019** issued by Defra in January 2019.

I am pleased to commend this strategy as a key step in continuing the progress already made towards improving air quality to help safeguard the health of those who live and work in Wiltshire.

Councillor Laura Mayes
Cabinet Member for
Adult Social Care,
Public Health & Public
Protection

Section 2: Defining air quality

Defining the air quality challenge



The air we breathe is made up of a complex mix of gases and fine particulates. Some of these are beneficial, some are harmful pollutants and others, such as pollen, that have both benefits and detrimental effects. Pollutants that affect our air quality come from both natural and manmade sources.

Wiltshire Council monitors certain pollutants using a network of nitrogen dioxide passive diffusion tubes, four real time monitoring stations and two Osiris indicative fine particulate monitors. It has developed a dedicated website for air quality which allows individuals to interrogate monitoring data, view reports, sign up for text alerts and view community action planning information.

The costs of air pollution

Human

Poor air quality has consequences for people's health and wellbeing as well as for our surrounding natural and built environment. The health consequences of polluted air are well documented, and were ably demonstrated by the London smogs of the late 19th and early 20th century. The worst of these events was shown to be responsible for many thousands of excess deaths. These historic smogs were caused by the large scale burning of coal and wood and were a highly visible example of air pollution and its health effects.

Many of the pollutants of concern today are invisible to the eye but act as respiratory irritants, which are particularly problematic if individuals have pre-existing medical conditions or other vulnerabilities. While significant improvements have been made, air pollution remains a real challenge for some communities in Wiltshire.

The Committee on Medical Effects of Air Pollution (COMEAP) found that the burden of manmade particulate air pollution on mortality in 2008 was equivalent to nearly 29,000 deaths in the UK at typical ages and an associated loss of total of population life of 340,000 life-years. The Royal College of Physicians' report "Every breath we take: the lifelong impact of air pollution" has recently put the figure at 40,000 deaths per year and the cost to health services and business at more than £20 billion.

Economic

The economic costs of air pollution are not immediately apparent. There are wide ranging indirect costs to the economy such as loss of income to individuals and to businesses through sickness absence and loss of productivity; traffic congestion as transport is delayed; repairs to infrastructure due to physical damage such as that caused to buildings by acidic rain and wider burdens associated with climate variation such as flooding.

Health care

The contribution of air pollution to the severity of illness and to the costs for health services and wider society are not yet well understood by the medical and scientific community. In 2010 the House of Commons Environment Audit Committee estimated the health costs of air pollution in the UK as being in the region of £8-£20 billion per year. It is often those at the lower end of the equality spectrum that live in the poorest housing, in areas where traffic is heavier and so experience less positive health and wellbeing outcomes. In tackling air quality we need to consider health inequalities and ensure these do not widen by working closely with public health professionals.

Pollutants of concern in Wiltshire

The air quality in Wiltshire is predominantly very good, with the majority of the county having clean, unpolluted air. There are, however, a small number of locations where the combination of traffic, road layout and topography result in pollutants being trapped so that concentrations increase to unacceptable levels.

Two pollutants cause most concern within Wiltshire: nitrogen dioxide (NO2) and particulate matter (PM10) primarily from motor vehicles.

The relatively few locations where air quality may fail to meet the national standards have to be investigated and sampled in order to determine the true extent of the problem. If significant pollution is identified the council has to declare an Air Quality Management Area (AQMA) and put plans in place to seek to improve the air quality.

There are currently eight AQMAs in Bradford on Avon, Calne, Devizes, Marlborough, Westbury and three in Salisbury. The specific actions being taken in these towns is detailed in **Wiltshire's Air Quality Action Plan.**

This strategy focuses on improving air quality across Wiltshire, seeks to prevent any further deterioration and encourage interventions that will reduce concentrations of nitrogen dioxide and fine particulates across the county.

Nitrogen oxides (NOx) are comprised mainly of two pollutants; nitric oxide (NO) and nitrogen dioxide (NO2) which are products of combustion of fossil fuels. Nitrogen oxides readily convert to nitrogen dioxide in the air, so to reduce concentrations of nitrogen dioxide it is essential to control emissions of NOx.

High levels of nitrogen dioxide causes inflammation of the airways and long-term exposure can affect lung function and respiratory symptoms. It can also increase asthma symptoms. The health impacts of nitrogen dioxide are, however, less well understood than those of particulate matter.

Particulate matter (PM) is a complex mixture of non-gaseous materials of varied chemical composition. It is categorised by the size of the particles. For example, PM10 is particles with a diameter of less than 10 microns. Most PM emissions are caused by road traffic, with engine emissions and tyre and brake wear being the main sources. Construction sites, are also potential sources of local particulate pollution, along with accidental fires and burning of waste. However, a large proportion of particulate comes from natural sources, such as sea salt, forest fires and Saharan dust, as well as from sources outside Wiltshire caused by human activity. Small particles tend to be long-lived in the atmosphere and can be transported great distances.

Particulates aggravate respiratory and cardiovascular conditions. Research shows that particles with a diameter of 10 microns or less (PM10) are likely to be inhaled deep into the lungs.

National picture

Levels of PM10 declined in the UK in the 1990s though the rate of improvement has been slower in the last decade. Similarly, nationally levels of NO2 fell until 2002 and have been relatively unchanged ever since. Locally it is a mixed picture; levels of nitrogen dioxide and particulates have reduced in many locations or plateaued in others. However, it should be borne in mind that the locations we monitor are those where levels are known to be elevated and represent a worst case scenario. These locations are very limited in number.

Recently concerns have emerged with respect to emissions from new road vehicles. A study by the Department for Transport (DfT) found significant differences between laboratory based emission performance and on the road real world emission levels. The government has indicated real world emission testing will be used in the future.

Air pollution and climate change

Improving air quality can also help address climate change. Ozone, which is formed by pollutants such as NOx and volatile organic compounds (VOCs) reacting in sunlight is a powerful greenhouse gas that contributes to global warming directly and by reducing carbon uptake by vegetation. Black carbon, which is part of the overall mass of particulate matter emitted by diesel engines through incomplete combustion, contributes to climate change by absorbing heat. By making vehicles, homes and workplaces more energy efficient, this strategy will also contribute to achieving the objectives of the council's policies and strategies with respect to climate change.

Climate change will also have an impact on air quality. Longer, hotter summers could increase the frequency and severity of summer smogs, though wetter winters may reduce emission concentrations

What has the Air Quality Strategy 2011 – 2015 achieved?

Improving local air quality requires changes to be made by everyone. Working collaboratively with communities, Wiltshire Council will seek to maintain the good air quality in the county and work to deliver improvements in areas where air quality fails national objectives in order to protect public health and the environment. Since the first strategy in 2011, a range of actions have been delivered. These include the provision of a dedicated air quality website providing real time data, a text alert service to warn of poor air quality, the setting up of community air quality action plan groups in areas with AQMAs, a countywide air quality action plan, draft supplementary planning guidance and an air quality policy in the Wiltshire Core Strategy.

Many of the measures contained within the strategic action plan have been implemented and are detailed in appendix 1.

The challenges we face and next steps

With new developments being built there is potential to increase the number of people living and working in areas with poor air quality and it is important that Wiltshire Council takes steps, to manage this situation to minimise or eliminate possible harm.

The challenge of maintaining and improving air quality in some of Wiltshire's market towns is considerable. These stem from:

- A requirement for new housing and essential economic development across the county.
- The layout of our historic towns, which often attract visitors from all over the world. Their narrow streets create canyon effects that can inhibit pollutant dispersal.
- Being a large rural county with a higher than average car ownership.
- The economic climate including the viability of rural public transport.
- Some towns not having a train station or public transport infrastructure.
- The county being a popular tourist destination.
- The A36 trunk road running through the south and west of the county, and is the main cross county road for commercial traffic between Bristol and Southampton.
- An aging population susceptible to chronic conditions that increase vulnerability to poor air quality.

The challenge we face is not just one for Wiltshire Council, but requires considerable effort on the part of all layers of government, businesses, communities and individuals.

Section 3: Wiltshire's air quality strategy

This strategy is supported by the local air quality management framework, the National Air Quality Strategy, the EU Air Quality Directive and the Public Health Outcomes Framework.

Our vision is to create an environment where people have healthy, active lives for a healthier population. In doing so it will reduce the human and financial cost of air quality to individuals, families, communities, public services and the wider economy. How we define and measure success is explained in section four.

This strategy supports the **Wiltshire Council Business Plan,** the **Joint Strategic Needs Assessment** and wider strategies including; **Local Transport Plan 3, Wiltshire Core Strategy, Climate Change Adaptation, Minerals and Waste Core Strategy** and the **Health and Wellbeing Strategy.**

The strategy helps inform the prioritisation of local needs and provides the link between the evidence base and development of policy.

It also sets out how we will encourage and work collaboratively across council services, schools, the business community, local communities and individuals to take action to improve air quality in Wiltshire by implementing this strategy and the Wiltshire Air Quality Action Plan (AQAP).

The Wiltshire AQAP is specific to the towns and city where an AQMA has been declared. The strategy does not set out replicate these actions but seeks to provide the link between the wider strategies of the council and the evidence base necessary for bringing about wider improvements in health and inequalities in Wiltshire that are influenced by air quality.

The council will provide strategic leadership and support action at a local level. This strategy also serves to bring communities together to enable them to solve problems locally and participate in decisions that affect them, so ensuring everyone lives in a high quality environment. This can be achieved by supporting local air pollution action groups.

The strategy's priorities are evidence led and have been shaped by the local health priorities, national and EU legislation and key government documents. The National Institute for Health and Care Excellence (NICE) published **Air Pollution: outdoor air quality and health ((QS181)** in February 2019 identifies four quality standards in relation to air quality, which are:

1. Local authorities identify in the Local Plan, local transport plan and other key strategies how they will address air pollution, including enabling zero- and low-emission travel and developing buildings and spaces to reduce exposure to air pollution.
2. Local planning authorities assess proposals to minimise and mitigate road-traffic related air pollution in planning applications for major developments.
3. Public sector organisations reduce emissions from their vehicle fleets to address air pollution.
4. Children, young people and adults with chronic respiratory or cardiovascular conditions are given advice at routine health appointments on what to do when outdoor air quality is poor.

In addition, Public Health England published a report entitled "**Review of interventions to improve outdoor air quality and public health**" in March 2019 which supports interventions at both national and local levels to reduce air pollution, and identified 5 areas where action is needed:

- Vehicles and fuels
- Spatial planning
- Industry
- Agriculture
- Behavioural change

Air pollution from industrial sources has a potential impact of the LAQM regime. An additional system of Integrated Pollution Prevention Control introduces specific controls for a range of the most polluting industries. This system is regulated by the Environment Agency and Local Authorities depending on the type and scale of the industry. Permit conditions are based on the use of Best Available Techniques (BAT).

Section 4: Strategic targets

Wiltshire Council is committed to working towards the achievement of local air quality objectives where exceedances have been identified and to reducing air pollution.

There are several formal frameworks which set targets for improving air quality. These are shaped by the World Health Organisation (WHO) guidelines for air quality. This chapter seeks to bring some clarity to these and details our strategic targets.

European Directive on Air Quality

EU limit values are legally binding parameters that must not be exceeded. Limit values are set for individual pollutants and are made up of a concentration value, an averaging time over which it is to be measured, the number of exceedances allowed per year, if any, and a date by which it must be achieved. Some pollutants have more than one limit value covering different endpoints or averaging times.

These limit values are targets to be achieved by national governments and data is gathered and reported annually to the EU by DEFRA. The UK action plan for nitrogen dioxide for tackling exceedances of the EU objective was publish in January 2016 and the Wiltshire action plan measures are included in the plan for the Southwest area.

Local air quality management

The Environment Act 1995 places responsibilities on local councils to monitor seven air pollutants. Two of these have proved particularly challenging; nitrogen dioxide (NO2) and fine particulates (PM10).

Recent Government action plans have blurred the boundaries between national and local responsibilities, placing greater emphasis on local councils to develop innovative solutions to improve air quality.

Pollutant	Air Quality Objective	
	Concentration	Measured as
Nitrogen dioxide	200 µg/m3 not to be exceeded more than 18 times a year	1 hour mean
	40 µg/m3	Annual mean
Particulate Matter (PM10) (gravimetric)	50 µg/m3, not to be exceeded more than 35 times a year	24 hour mean

A full list of national and local objectives is contained in Appendix 2.

Public Health Outcomes Framework

Public Health and Public Protection work closely with respect to air quality. The aim of the Public Health Outcomes Framework (PHOF) is to improve and protect the nation's health and wellbeing, and improve the health of the poorest fastest.

The framework details four domains for health improvement with a range of indicators. The Health Protection domain includes air quality as an indicator.

Levels of PM2.5 are monitored using the Automatic Urban and Rural Network (AURN) and modelled background data is published on a 1km x 1km grid square basis by DEFRA. We also have two Osiris monitors that are deployed as needs are identified which, are capable of providing indicative monitoring of PM2.5.

Objectives

Our objectives are:

- To meet the annual average and hourly mean LAQM objective and EU limit for nitrogen dioxide.
- To meet the annual average and 24 hour mean LAQM objectives and EU limits for Fine Particulates (PM10).

Achieving these targets will result in:

- Reduced use of private cars
- Better informed strategic planning
- Increased use of public transport
- More people being active
- Provision of increased infrastructure for cycling and walking
- Increase use of alternatives to fossils fuels
- Increased active travel
- Fewer people dying from respiratory and cardiovascular disease and cancer
- Improve the wellbeing of those who suffer from respiratory and cardiovascular disease
- Contribute to climate change reduction
- More sustainable development
- A reduction in health inequalities

The success of the strategy will be measured against trends in our monitoring data, (both real-time and diffusion tubes) and revocation of existing air quality management areas. Progress will be monitored and reported via in the Annual Status Report, which the council submits to DEFRA each year and via the Health & Wellbeing Board.

Section 5: Delivering good air quality - responsibilities

Tackling air pollution is a complex national challenge. The sources of pollution are intimately bound up in our day to day lives and our use of private vehicles. No one individual service, group or partner has the ability to bring about improvements in air quality and therefore the following points have been identified as key priorities for achieving the objectives of this strategy.

Our approach is a county wide one, and is based upon maintaining and preventing the deterioration of air quality across the county. It does not focus solely on those areas where AQMAs have already been declared or where levels of pollutants are elevated. Prevention not only requires commitment from the Council but from communities and individuals.

Action is required at the following levels:

National and EU:

The Government has submitted national air quality action plans to the EU detailing how they propose to meet the EU limit values for nitrogen dioxide and small particulates. This includes proposals for new Clean Air Zones in areas with exceedences of EU limit levels. The Local Authority Air Quality Action Plans are included in the regional plans which form part of this. The EU have also set emission standards for vehicles. These standards need to be met in the real world as well as under laboratory test conditions if meaningful improvements in air quality are to be achieved.

Wiltshire Council

We will continue to work collaboratively with, sustainable transport, strategic planning, development control and economic development teams to ensure that air quality is properly considered and incorporated into decision making to maintain and improve the built environment and infrastructure. This will also support the council's aim to meet its climate change objectives.
We will continue to monitor and report on air quality in accordance with the requirements of Local Air Quality Management regime.

Communities and individuals

The choices we all make can have an impact on reducing air pollution. The following list offers some simple actions.

- Reduce the number of car trips
- Walk or cycle for short journeys
- Use public transport or car share
- Use the Home Run app (school travel app.)
- Reduce burning at home (mulch or compost garden waste instead of bonfires)
- Get involved with local community air quality action group
- Support community tree planting schemes
- Ensure car is properly maintained with correct tyre pressures
- Avoid excessive idling of your car
- Re-route your commute

Section 6: Strategic priorities and actions

The strategic objectives draw upon and build on the themes developed in the Air Quality Action Plan for Wiltshire. They apply across the whole county and seek to address increasing concern about the public health effects of exposure to vehicle fumes.

Strategic priority 1: Secure air quality objectives in the eight Air Quality Management Areas (AQMA)

The poorest areas of air quality have been identified and Wiltshire Council is committed to working with communities, partner agencies and other services to secure the necessary improvements within the Local Air Quality Management Framework.

What we will do:

- The tools by which this will be achieved are contained in the Air Quality Action Plan for Wiltshire, which includes local Community Air Quality Action Plans. Progress with the Action Plan will be reported in the Annual Status Report which is submitted to DEFRA in June each year and will be published on the council's air quality website.
- Continue to facilitate joint working with Area Boards to develop local action plans and initiatives at community level.
- Require air quality impact assessments for planning applications in respect of standby generator farms used to supplement demand on the National Grid require mitigation where appropriate to minimise the impact of exhaust fumes. Proposals within an AQMA or that may impact on an AQMA may be recommended for refusal.
- Require new development to adhere to the principles, objectives and spirit of this strategy and to require adherence to core policy 55

Strategic priority 2: Maintaining good air quality across the county

Preventing the deterioration of air quality in the first place is the most cost effective strategy to ensure a vibrant local economy, and that Wiltshire is a place where people wish to live, work and visit.
What will we do:

- Work in partnership with Spatial Planning and Development Control to ensure air quality continues to be integrated into the planning system. To facilitate this we will work toward the formal adoption of Supplementary Planning Document on air quality.
- We will require air quality impact assessments of new residential and commercial development in pursuance of core policy 55 and the objectives of this strategy.
- We will work with Spatial Planning on refreshing core policy 55 and to promote greater consistency between policies on air quality, sustainable development, transport and climate change.
- We will work with Development Control and Developers to ensure development does not lead to future air quality problems. This may be through design and layout or through financial contributions to specific projects that promote better air quality.
- Working with planners we want to ensure that new development helps reduce the need to travel particularly by private car, and will encourage the sustainable, safe and efficient movement of people and goods within Wiltshire through measures such as the creation of cycle ways, green travel plans and that otherwise promote and enhance individuals' ability to use alternatives to the private motor car and encourage tree planting schemes to help improve air quality.
- We are committed to maintaining air quality monitoring across the county to address local concerns where they arise and to provide that information on a public platform
- We will work with Transport Planners and ensure that air quality is a consideration in transport strategies and plans and seek funding for air quality improvements.
- We will work with teams engaged in economic development and regeneration to facilitate the Government's ambition of a low carbon, low emission economy, to ensure improvements are ongoing and sustainable, support future development and decouple local growth from air pollution and carbon emissions.
- Ensure air quality continues to be embedded into the thinking and decision process of the council.
- We will support and encourage local communities to facilitate alternatives to the private car for local journeys
- We will encourage local communities to work with schools and businesses to promote the use of travel plans
- Through the planning process we will require electric vehicle charging points on new residential and commercial developments

Strategic priority 3: Wiltshire Council's own actions

The council recognises that in improving air quality, it has its own role to play in reducing emissions and also has the ability to influence policies that will contribute to an improvement in air quality.

What will we do:

- We will engage with taxi licensing team to explore how we can encourage promotion of low emission vehicles for private hire and taxi use.
- Build on and support wider work of the council with regard to renewable energy, district heating systems and climate adaptation.
- Support the promotion of sustainable travel and active travel to work by staff, contractors and partners.
- We will work in partnership with the council's fleet management team to explore how the council can promote and embrace use of low emission vehicles in its own business and reduce business mileage.
- We will work with the passenger transport teams to promote sustainable public transport and transport to schools.
- We will encourage low carbon, low pollution considerations to be included in procurement.
- Work with bus companies and other partners to support bids to the Office for Low Emission Vehicles (OLEV) to secure improvements to emissions from public transport.
- Explore the development of a Low Emissions Strategy in partnership with the Eco Board.
- Seek to work with Wiltshire Council partner organisations to reduce their emissions and carbon footprint.
- Work with the school travel adviser to promote and facilitate sustainable and active travel to school by school children and parents.
- Pilot and support initiative and projects in and around new development to facilitate sustainable and active travel, such as 'Home Run' and 'Beat the Street through S106 funding.
- Secure funding through S106 contributions for infrastructure and other environmental improvements such as tree planting that will contribute towards improving air quality.
- Investigate the introduction of no idling zones particularly around schools

Strategic priority 4: Communication and information dissemination

Good communication and information dissemination are key to shaping policy and plans,keeping communities informed, and assisting those professionals tasked with planning new development.

What will we do:

- We will provide tailored, clear, accurate and consistent messages about the benefits of good air quality, utilising the Wiltshire air quality website as a platform to inform and educate.
- We will identify people who are at risk from poor air quality and promote a text alert system.
- A text alert system will be embedded into other services offered by the council which cater for 'at risk' groups such as Warm and Safe.
- We will work with communities where air quality is identified as a local priority in the Community Area Joint Strategic Assessment.
- Advise local groups on siting and analysis of NO2 monitoring tubes (see Appendix 3).
- We will support events such as Clean Air Day and work to engage with local communities to raise awareness of measures they and individuals can take to reduce air pollution in their towns & villages.

Section 7: Implementation

Implementation, development and evaluation of the Air Quality Strategy will be driven by Health & Wellbeing Board. The group includes members from Wiltshire Council, the Environment Agency, PHE, NHS Wiltshire CCG and key partners. We will continue to build on existing work to implement change through the community air quality working groups.

Section 8: Governance

This strategy is governed by the Health & Wellbeing Board.

Not all actions are contained within the air quality strategy. Progress on the Air Quality Action Plan will be reported to Defra and local air quality action plans will be reported on to the Area Boards and Defra. This strategy forms an overarching policy document that seeks to maintain and improve air quality across the county. Further actions are contained in the Air Quality Action Plan and Community Action Plans. These will be published on the **Wiltshire Air Quality** web page and reported on to Defra and the relevant area board.

Section 9: References and resources

1. Air Quality Plan for Nitrogen Dioxide in UK (2017) DEFRA
2. Clean Air Strategy (2019) DEFRA
3. Review of Interventions to improve outdoor air quality and Public Health
4. Air Pollution: Outdoor air quality and health (2019) NICE
5. Public Health Outcomes Framework
6. Wiltshire Air Quality Website
7. Wiltshire Know & Respond Text Alert Service
8. Defra guidance on siting of diffusion tubes

Appendix 1: First Wiltshire Air Quality Strategy achievements

Summary of Measures implemented from Air Quality Strategy 2011 – 2015

- Smarter travel initiatives to encourage a shift to greener modes of transport.
- Funding and supporting car clubs.
- Smoothing traffic.
- Development of electric vehicle infrastructure.
- Bus emissions programme, so that older buses have been fitted with particulate traps and diesel-electric hybrid buses are introduced as quickly as possible.
- Publication of air quality action plan.
- Inclusion of core policy 55 in the Wiltshire Core Strategy.
- Draft Air Quality Supplementary Planning Document.
- Wiltshire Air Quality website.
- Establishment of community air quality action plan groups in areas with AQMAs.
- Text alert system for poor air quality: Know and Respond.
- Beat the Street – Public Health joint project with local AQ groups.
- Wiltshire Council – Reduced business miles, remote working, electric pool cars, electric charging points, waste contract.
- Electric charging points in public car parks and train stations.

Appendix 2: Air quality objectives

Pollutant	Air quality objective		Date to be achieved by
	Concentration	Measured as	
Benzene	16.25µg/m3	Running annual mean	31.12.2003
	5.00µg/m3	Running annual mean	31.12.2010
1,3-Butadiene	2.25µg/m3	Running annual mean	31.12.2003
Carbon monoxide	10.0mg/m3	Running 8 hour mean	31.12.2003
Lead	0.5µg/m3	Annual mean	31.12.2004
	0.25µg/m3	Annual mean	31.12.2008
Nitrogen dioxide	200µg/m3 not to be exceeded more than 18 times a year	1 hour mean	31.12.2005
	40µg/m3	Annual mean	31.12.2005
Particles (PM10) (gravimetric)	50µg/m3, not to be exceeded more than 35 times a year	24 hour mean	31.12.2004
	40µg/m3	Annual mean	31.12.2004
Sulphur dioxide	350µg/m3, not to be exceeded more than 24 times a year	1 hour mean	31.12.2004
	125µg/m3, not to be exceeded more than 3 times a year	24 hour mean	31.12.2004
	266µg/m3, not to be exceeded more than 35 times a year	15 minute mean	31.12.2005

Appendix 3: NO2 monitoring using diffusions tubes

Diffusion tubes are inexpensive and many can be installed over a geographical area. The low cost per tube permits sampling at a number of points in the area of interest; which is useful in highlighting "hotspots" of high concentrations, such as alongside major roads. They are less useful for monitoring around point sources or near to industrial locations where greater temporal resolution is required for particular objectives. They are useful both for annual monitoring as well as short term monitoring projects. They can be placed in many different locations, though are typically placed on building facades in heavily trafficked areas, and in urban background locations.

Diffusion tubes sample the air over a period of a month. As such they are useful for assessing the annual objective of 40µg/m3, but cannot be used to assess the number of hours greater than 200µg/m3. As they are not the reference method, and passive diffusion typically results in a low accuracy, it is necessary to bias correct the results based upon local or national collocation studies with chemiluminescent analysers. It is also necessary to calculate the data capture, and if this is less than 75%, the results should be annualised.

The site should be open to the sky, with no overhanging vegetation or buildings. Ideally, samplers would be placed at breathing height, but in order to reduce theft of tubes, it is recommended that tubes are placed at a height of 2-4 m. It is important to place diffusion tubes where there is free circulation of air around the tube, but the opposite extreme should also be avoided, i.e. areas of higher than usual turbulence. For this reason, the tube should not be located on the corner of a building. Care should be taken to avoid any very localised sources, sinks of NO2, or disturbances to the airflow. For example, tubes should be mounted more than 10m from the following:

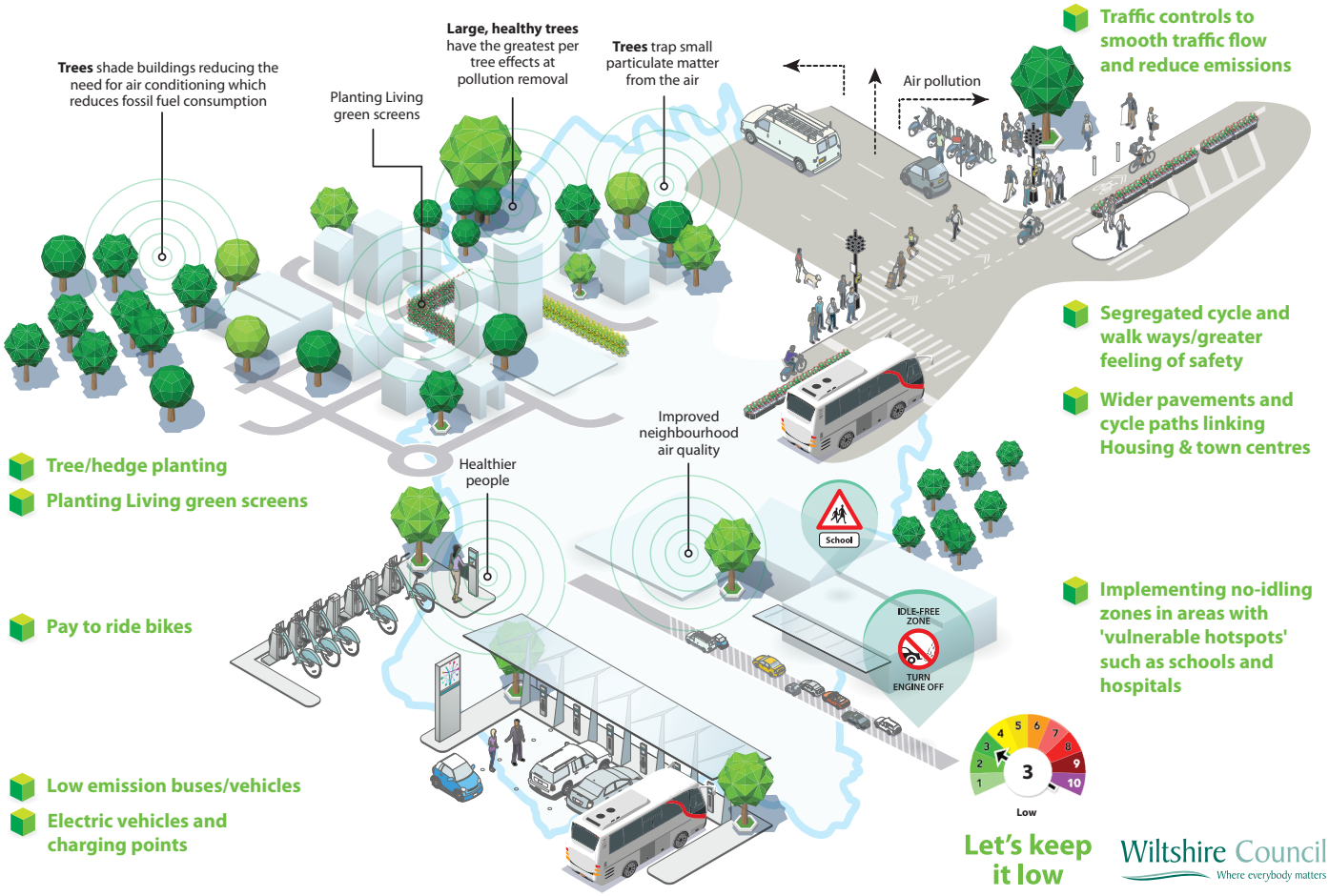
- Heater flues (particularly low level balanced flues);
- Bushes or trees overhanging or surrounding the tube location;
- Air conditioning outlets;
- Extractor vents; or
- Underground ventilation shafts.

More detailed guidance on the siting of diffusion tubes is given in section 3 of the report produced for Defra in February 2008 entitled "Diffusion Tubes for Ambient NO2 Monitoring: Practical Guidance"

https://uk-air.defra.gov.uk/assets/documents/reports/cat05/0802141004_NO2_WG_PracticalGuidance_Issue1a.pdf

Appendix 4: Air quality info-graphic

Local actions to improve air quality



- Traffic controls to smooth traffic flow and reduce emissions
- Segregated cycle and walk ways/greater feeling of safety
- Wider pavements and cycle paths linking Housing & town centres
- Implementing no-idling zones in areas with 'vulnerable hotspots' such as schools and hospitals
- Tree/hedge planting
- Planting Living green screens
- Pay to ride bikes
- Low emission buses/vehicles
- Electric vehicles and charging points